

25 June 2024

Simberi Diamond Drill Program Update

Gold Results Returned from Pigibo Resource Definition Drilling

Highlights

- Assay results have been received for all eight Pigibo resource definition holes (since the last ASX release on 7 June 2024 titled “*More Encouraging Assay Results from Sorowar – Pigiput Mineralised Zone*”).
- Assays received for the eight Pigibo resource definition drill holes will assist in improving confidence in the resource through locally upgrading the resource classification. Significant Pigibo resource definition drill hole intercepts include:
 - **SDH550: 40 m @ 3.1 g/t Au from 21 m, including 24 m @ 4.4 g/t Au from 37 m;**
 - **SDH539: 71 m @ 1.2 g/t Au from 0 m;**
 - **SDH535: 56 m @ 1.2 g/t Au from 0 m, including 8 m @ 3.2 g/t Au from 48 m;**
 - **SDH536: 36 m @ 1.7 g/t Au from 97 m, including 6 m @ 5.6 g/t Au from 113 m;**
 - **SDH532: 21 m @ 2.7 g/t Au from 54 m, including 10 m @ 4.6 g/t Au from 63 m.**

St Barbara Limited (“**St Barbara**” or the “**Company**”) (ASX: SBM) is pleased to announce that all assay results have now been returned for the resource definition drilling of the Pigibo portion of the 31 hole, 7,500-metre diamond drill program at the Simberi Operations in Papua New Guinea (PNG). At Pigibo, eight resource definition drill holes were completed for 1,492.3 m.

Managing Director and CEO Andrew Strelein said “*Hole SDH550 intersected 40 m at 3.1 g/t Au from 21 m, including 24 m at 4.4 g/t Au from 37 m, and is another very encouraging broad intercept from within the current Mineral Resource.*”

“*Hole SDH532 intersected 21 m @ 2.7 g/t Au from 54 m, including 10 m @ 4.6 g/t Au from 63 m and hole SDH536 intersected 36 m @ 1.7 g/t Au from 97 m, including 6 m @ 5.6 g/t Au from 113 m. Holes SDH532 and SDH536 are located around 30 m and 50 m respectively below the current conceptual sulphide pit design.*”

“*Whilst these drilling results won’t be able to be included in the Mineral Resource and Ore Reserve update currently underway, they would be included in subsequent updates.*”

“*Having almost completed our first sulphide diamond drilling program since 2011 we believe significant potential remains for defining additional sulphide ore.*”

The FY24 Simberi sulphide resource definition drilling program comprised 23 holes for 4,587.6 m including 15 holes at Sorowar – Pigiput trend (reported previously) and eight new holes at Pigibo. The eight Pigibo resource definition drill holes (SDH532, 535, 536, 539, 543, 545, 550 and 553) for 1,492.3 m were completed by end of April 2024.

The Simberi sulphide exploration component of the drilling program comprising eight holes for 2,900 m is 85% complete. The program includes four holes at Sorowar – Pigiput (reported previously) and four holes at Pigibo testing for mineralisation down dip outside any current Inferred Resource area. To date, seven holes have been completed for 2,494.1 m.

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Assays have been received for all eight Pigibo resource definition holes (since the last ASX release on 7 June 2024 titled “More Encouraging Assay Results from Sorowar – Pigiput Mineralised Zone”).

Explanatory Notes

Figure 1 below shows the location of the respective open pits on the main mining lease (ML 136).

Figure 2 shows the locations of the FY24 completed and planned diamond drill holes including resource definition, exploration and metallurgical sample holes.

Figure 3 shows the location of significant assay results for the eight Pigibo resource definition drill holes. In addition, significant assay results are displayed for two recent Pigibo metallurgical drill holes completed in the area. The location of three completed exploration holes with pending assays are highlighted. One exploration hole for 420 m remains to be drilled at Pigibo, and is expected to be completed by by end of June 2024. Assay results for all four Pigibo exploration drill holes are expected to be received by September 2024.

Significant assay intercepts from the eight Pigibo resource definition diamond holes include:

- **SDH550: 40 m @ 3.1 g/t Au from 21 m, including 24 m @ 4.4 g/t Au from 37 m; and**
- **SDH539: 71 m @ 1.2 g/t Au from 0 m;**
- **SDH535: 56 m @ 1.2 g/t Au from 0 m, including 8 m @ 3.2 g/t Au from 48 m, 29 m @ 0.7 g/t Au from 126 m, 19 m @ 0.9 g/t Au from 161 m;**
- **SDH536: 36 m @ 1.7 g/t Au from 97 m, including 6 m @ 5.6 g/t Au from 113 m;**
- **SDH532: 21 m @ 2.7 g/t Au from 54 m, including 10 m @ 4.6 g/t Au from 63 m, 25 m @ 1.0 g/t Au from 112 m;**
- **SDH545: 25 m @ 1.1 g/t Au from 15 m, 71 m @ 0.8 g/t Au from 51 m; and**
- **SDH543: 3 m @ 8.8 g/t Au from 0 m, 10m @ 2.0 g/t Au from 10 m.**

Figures 4 to 7 provide cross-sections (from Figure 3) showing the significant assay results returned for the eight Pigibo resource definition diamond drill holes.

Figure 5 is a cross-section that displays the recent significant intercepts received for drill holes SDH535, 536, 539 and 543 plotted in relation to the current mined surface and the conceptual Pigibo sulphide pit design. Although SDH535, SDH539 and SDH543 were drilled within the current Inferred Resource and the conceptual sulphide pit design, SDH536 intersected significant mineralisation located 40 m below the current grade shell and 50 m below the conceptual sulphide pit design.

Figure 6 is a cross-section that displays the recent significant intercepts received for drill holes SDH532, SDH535 and SDH545 plotted in relation to the current mined surface and the conceptual Pigibo sulphide pit design. Although SDH535 and SDH545 were drilled within the current Inferred Resource and the conceptual sulphide pit design, SDH532 intersected significant mineralisation located within the current grade shell and 30 m below the conceptual sulphide pit design.

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Figure 1. Simberi Island Site Layout within Mining Lease

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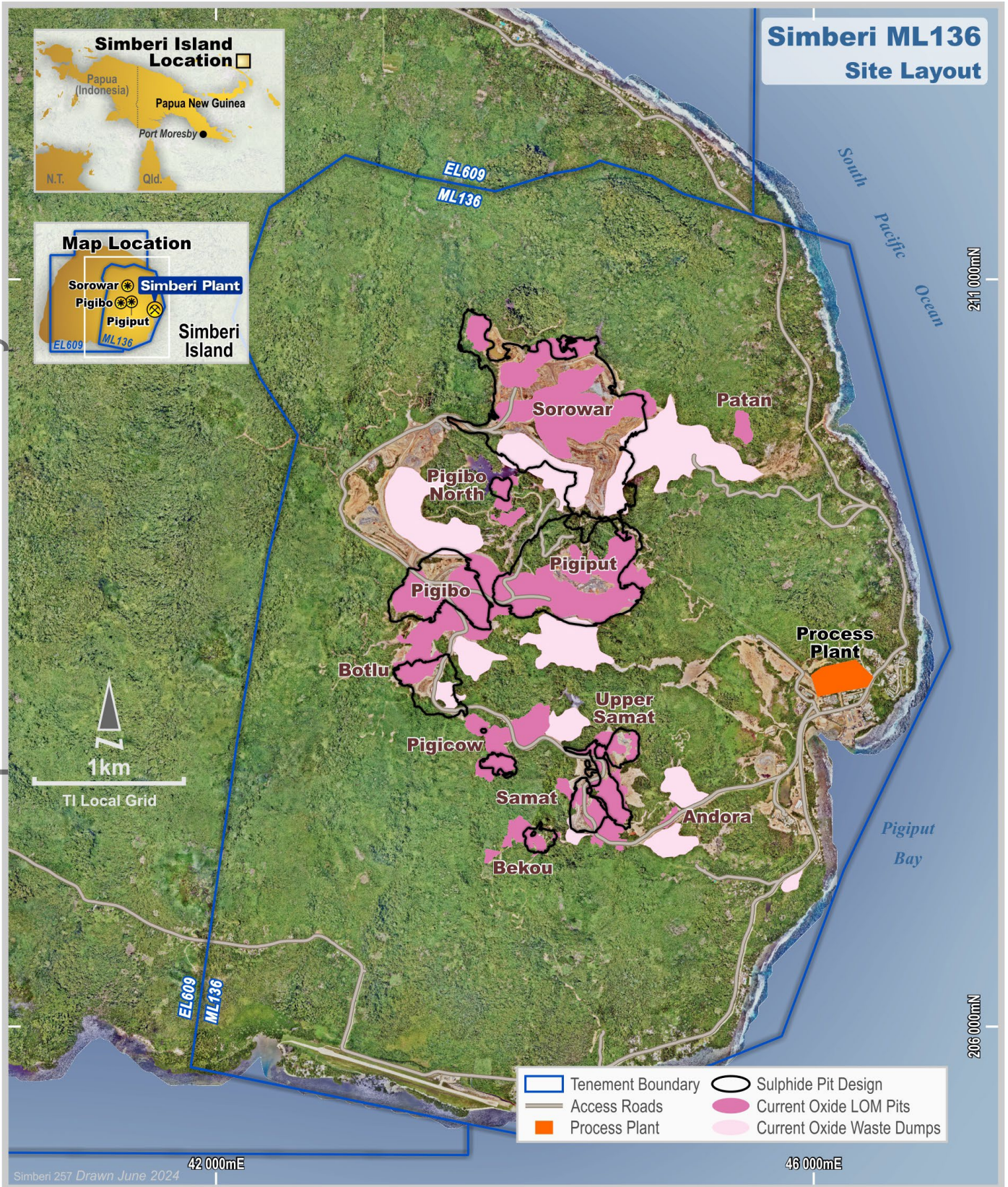
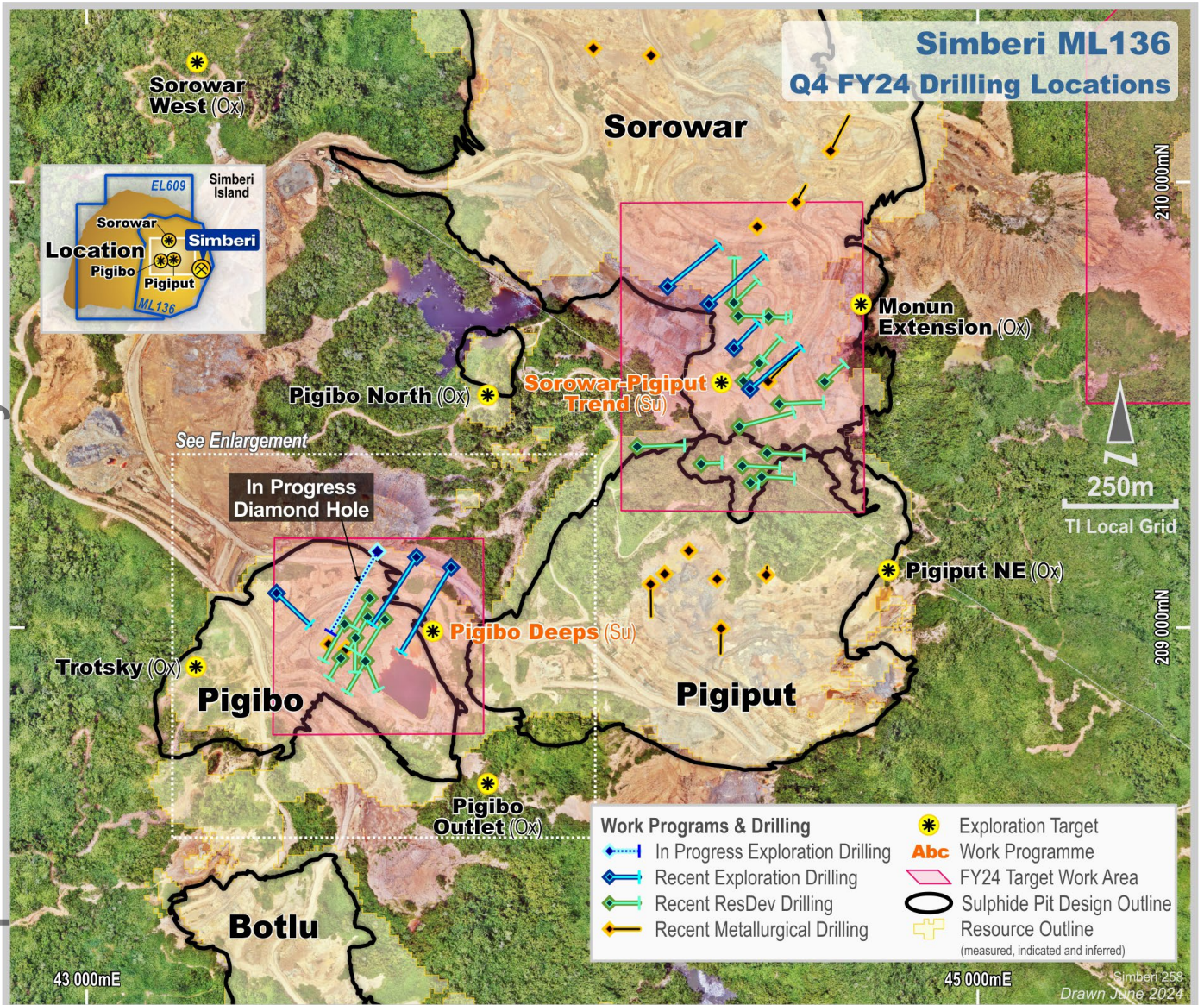


Figure 2. FY24 Completed and Planned Diamond Drilling, Simberi Island, Papua New Guinea



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Figure 3. FY24 Completed and Planned Diamond Drilling, Pigibo, Simberi Island

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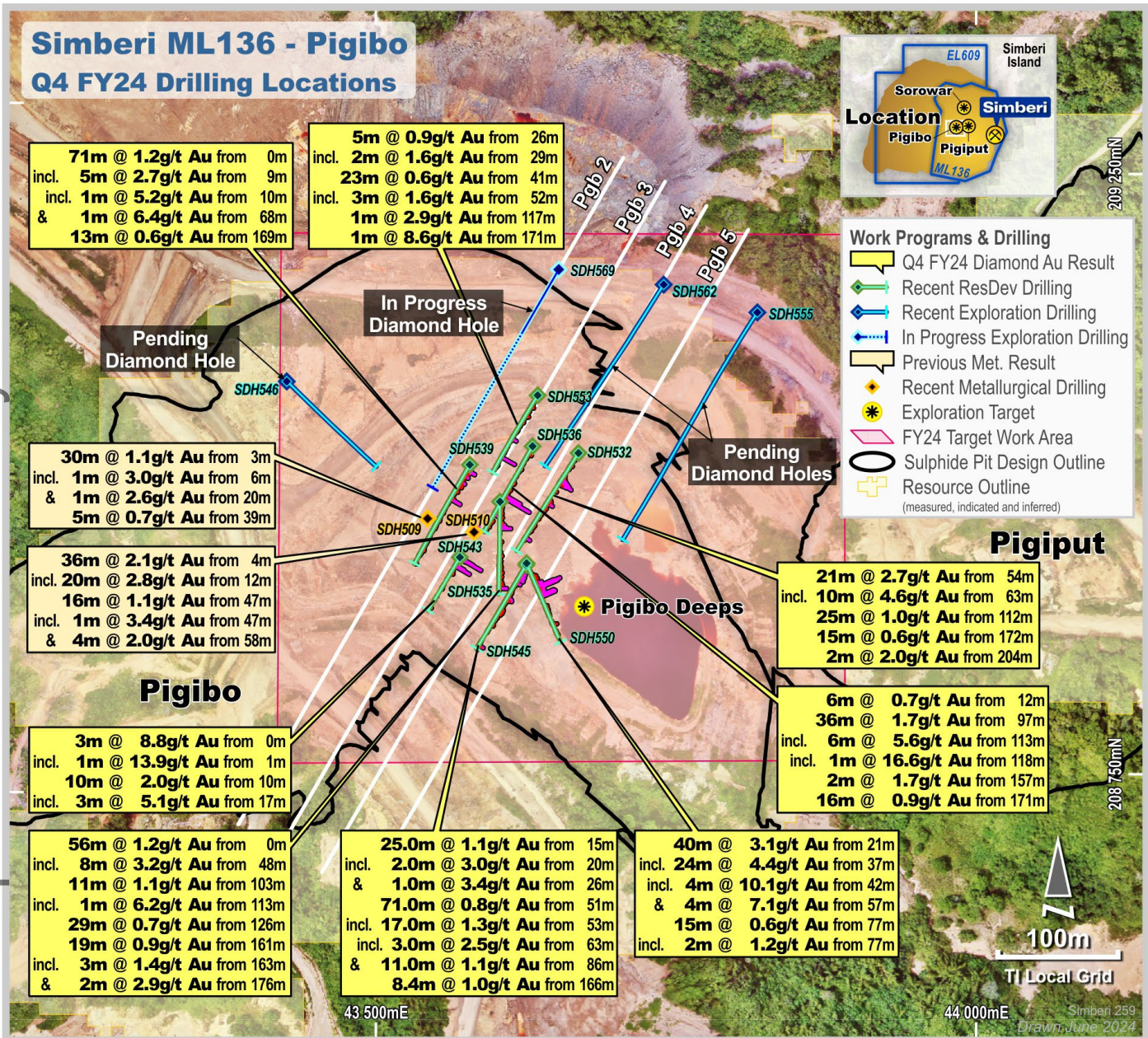


Figure 4. Drill Cross Section Pgb2 (View Looking Northwest), Pigibo, Simberi Island

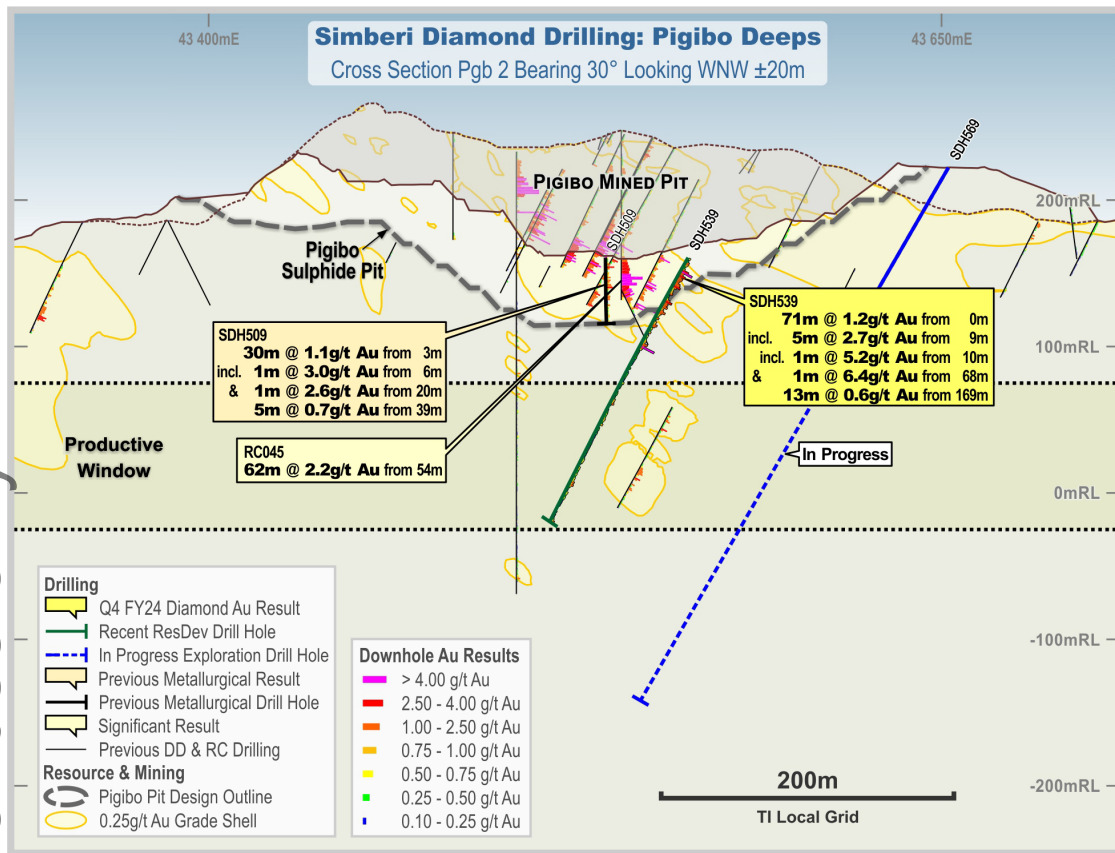
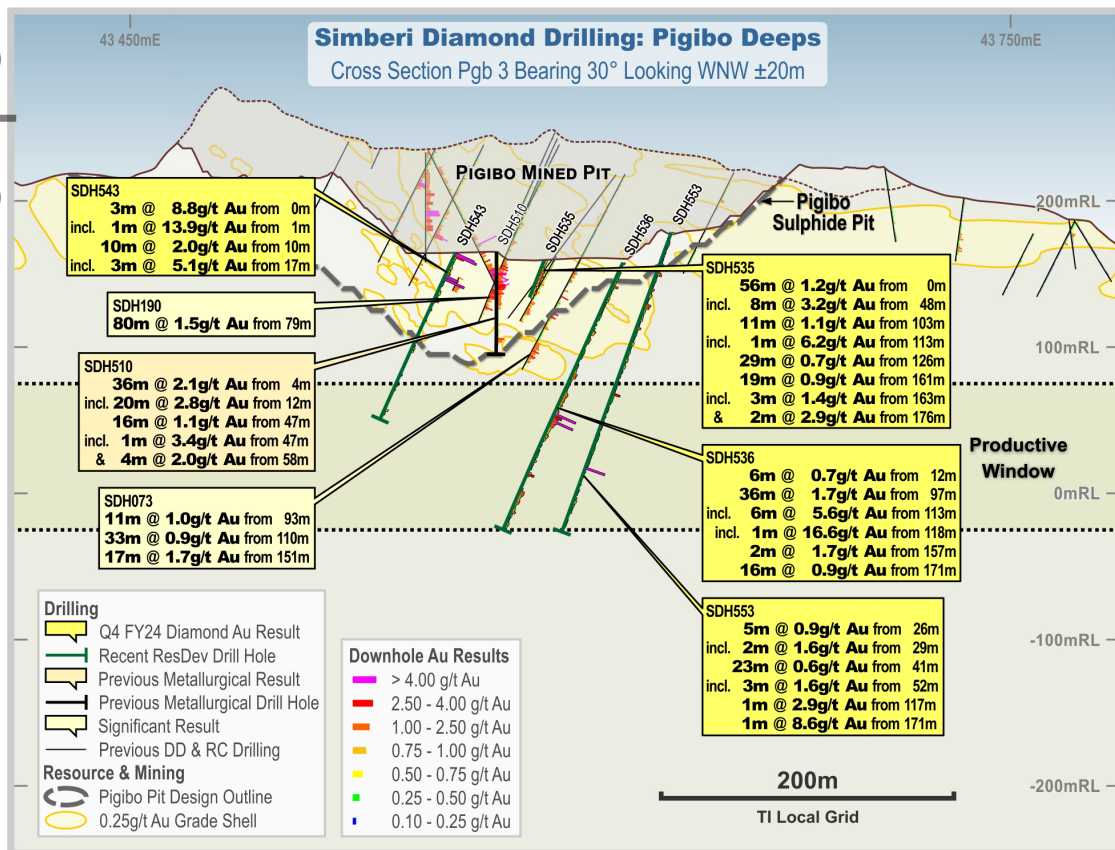


Figure 5. Drill Cross Section Pgb3 (View Looking Northwest), Pigibo, Simberi Island



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Figure 6. Drill Cross Section Pgb4 (View Looking Northwest), Pigibo, Simberi Island

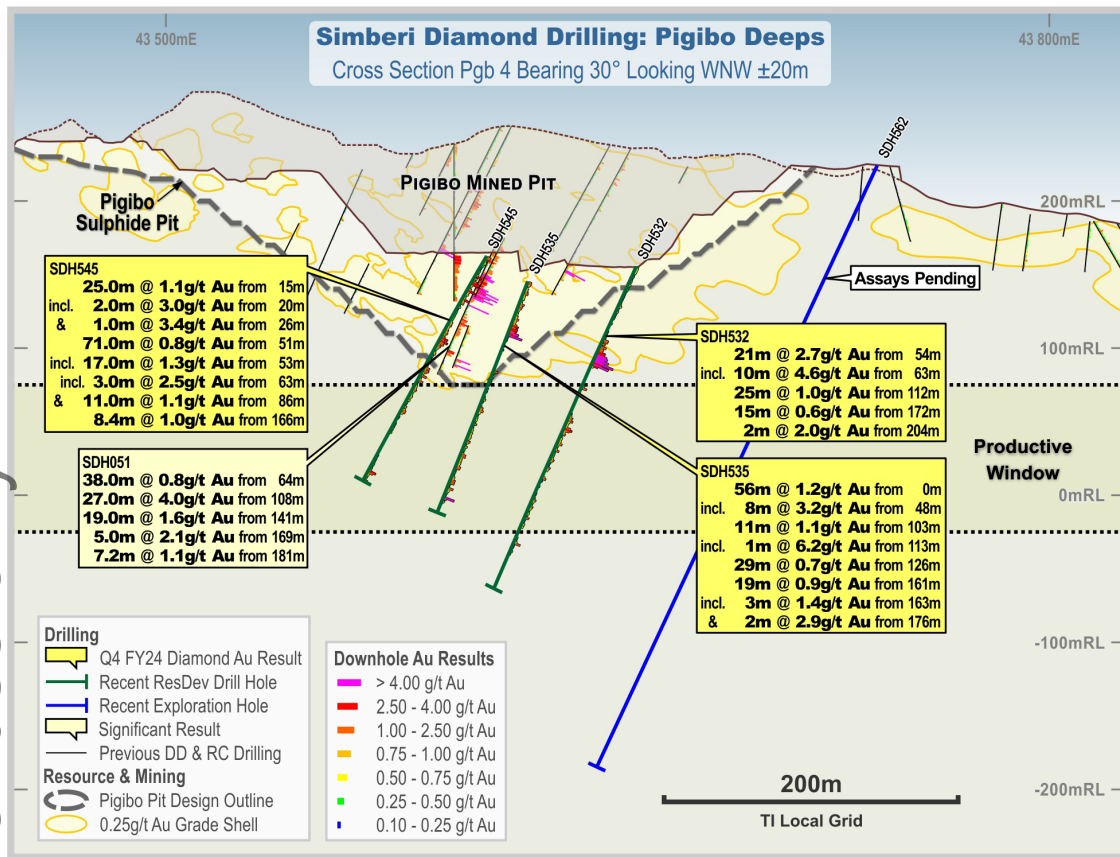
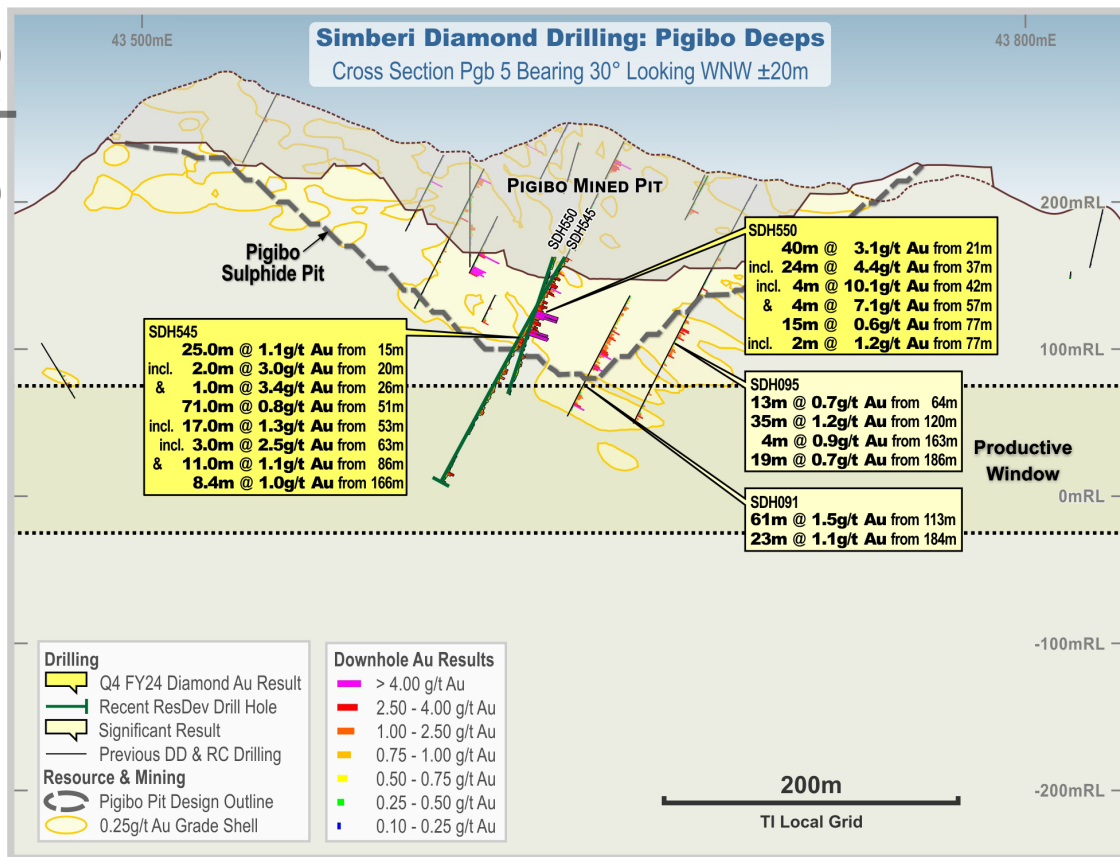


Figure 7. Drill Cross Section Pgb5 (View Looking Northwest), Pigibo, Simberi Island



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Competent Persons Statement

The information in this report that relates to Exploration Results is based on information compiled by Dr Roger Mustard, who is a Member of The Australasian Institute of Mining and Metallurgy. Dr Mustard is a full-time employee of St Barbara and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Mustard consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

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Table 1: Simberi Diamond Drilling Significant Intercepts – Simberi Island, Papua New Guinea

Hole Id	North	East	RL	Dip/ Azimuth	Total Depth	Lode	Down-hole Mineralised Intersection			
	m	m	m	degrees	m		From	To	Interval	Gold grade
							m	m	m	g/t Au
SDH532	209,018	43,669	155.4	-66 / 212	239.3	OX	1.0	5.0	4.0	0.7
						SU	54.0	75.0	21.0	2.7
<i>including</i>						SU	63.0	73.0	10.0	4.6
						TR,SU	112.0	137.0	25.0	1.0
<i>including</i>						SU	120.0	121.0	1.0	3.8
						SU	143.0	152.0	9.0	0.6
						SU	172.0	187.0	15.0	0.6
						SU	204.0	206.0	2.0	2.0
<i>including</i>						SU	205.0	206.0	1.0	3.2
SDH535	208,977	43,604	160.1	-66 / 181	188.0	OX,TR,SU	0.0	56.0	56.0	1.2
<i>including</i>						SU	48.0	56.0	8.0	3.2
						SU	103.0	114.0	11.0	1.1
<i>including</i>						SU	113.0	114.0	1.0	6.2
						SU	126.0	155.0	29.0	0.7
<i>including</i>						SU	144.0	146.0	2.0	1.7
						SU	161.0	180.0	19.0	0.9
<i>including</i>						SU	163.0	166.0	3.0	1.4
<i>and</i>						SU	176.0	178.0	2.0	2.9
<i>including</i>						SU	176.0	177.0	1.0	4.4
SDH536	209,023	43,631	157.8	-65 / 210	200.1	OX,TR	12.0	18.0	6.0	0.7
						TR	51.0	54.0	3.0	0.9
						TR	83.0	86.0	3.0	1.4
						TR,SU	97.0	133.0	36.0	1.7
<i>including</i>						TR	113.0	119.0	6.0	5.6
<i>including</i>						TR	118.0	119.0	1.0	16.6
						TR	157.0	159.0	2.0	1.7
<i>including</i>						TR	158.0	159.0	1.0	2.5
						TR,SU	171.0	187.0	16.0	0.9
SDH539	209,008	43,578	160.7	-61 / 210	203.5	TR,SU	0.0	71.0	71.0	1.2
<i>including</i>						SU	9.0	14.0	5.0	2.7
<i>including</i>						SU	10.0	11.0	1.0	5.2
<i>and</i>						SU	21.0	22.0	1.0	3.0
<i>and</i>						SU	33.0	34.0	1.0	3.1
<i>and</i>						TR	68.0	69.0	1.0	6.4
						SU	109.0	113.0	4.0	0.8
						SU	169.0	182.0	13.0	0.6
<i>including</i>						SU	172.0	175.0	3.0	1.1

NOTES:

OX: oxide, SU: sulphide, TR: transitional material

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Table 1 Cont: Simberi Diamond Drilling Significant Intercepts – Simberi Island, Papua New Guinea

Hole Id	North	East	RL	Dip/ Azimuth	Total Depth	Lode	Down-hole Mineralised Intersection			
	m	m	m	degrees	m		From	To	Interval	Gold grade
							m	m	m	g/t Au
SDH543	208,931	43,570	164.5	-65 / 210	125.0	TR	0.0	3.0	3.0	8.8
<i>including</i>						TR	1.0	2.0	1.0	13.9
						TR,SU	10.0	20.0	10.0	2.0
<i>including</i>						TR,SU	17.0	20.0	3.0	5.1
						SU	29.0	36.0	7.0	0.7
SDH545	208,924	43,625	162.6	-60 / 211	174.4	OX	0.0	3.0	3.0	0.9
						OX,TR	15.0	40.0	25.0	1.1
<i>including</i>						TR	15.0	16.0	1.0	2.6
<i>and</i>						TR	20.0	22.0	2.0	3.0
<i>and</i>						TR	26.0	27.0	1.0	3.4
<i>and</i>						OX	33.0	34.0	1.0	2.8
						TR,SU	51.0	122.0	71.0	0.8
<i>including</i>						TR	53.0	70.0	17.0	1.3
<i>including</i>						TR	63.0	66.0	3.0	2.5
<i>and</i>						TR,SU	86.0	97.0	11.0	1.1
<i>and</i>						TR	119.0	121.0	2.0	1.4
						TR,SU	166.0	174.4	8.4	1.0
<i>including</i>						TR,SU	166.0	168.0	2.0	2.2
SDH550	208,919	43,621	178.0	-59 / 158	144.0	OX,TR,SU	21.0	61.0	40.0	3.1
<i>including</i>						OX,TR,SU	37.0	61.0	24.0	4.4
<i>including</i>						OX	42.0	46.0	4.0	10.1
<i>and</i>						OX,TR,SU	57.0	61.0	4.0	7.1
						SU	77.0	92.0	15.0	0.6
<i>including</i>						SU	77.0	79.0	2.0	1.2
SDH553	209,066	43,635	178.6	-70 / 212	218	SU	26.0	31.0	5.0	0.9
<i>including</i>						SU	29.0	31.0	2.0	1.6
						SU	41.0	64.0	23.0	0.6
<i>including</i>						SU	52.0	55.0	3.0	1.6
						SU	117.0	118.0	1.0	2.9
						SU	171.0	172.0	1.0	8.6

NOTES:

OX: oxide, SU: sulphide, TR: transitional material

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**JORC Table 1 Checklist of Assessment and Reporting Criteria
Section 1 Sampling Techniques and Data – Simberi ML136 (Pigibo)**

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Criteria	Commentary
Sampling techniques	<ul style="list-style-type: none"> Diamond Drilling comprised PQ3 (83 mm) and HQ3 (61.1 mm) sized core collected using standard triple tubes. Half core was sampled on nominal 1 metre intervals with the lower or left half (looking downhole) of the core submitted for sample preparation and analysis. Competent core is half cored by an Almonte automated coresaw whereas broken or highly weathered core is manually half cored with a masonry chisel. Half core samples were fully prepared at the company's on-site sample preparation facility on Simberi Island with 150 g to 200 g pulps sent to ALS Laboratory in Townsville for further analysis. Pulp residues are stored in Townsville for six months following assay before disposal.
Drilling techniques	<ul style="list-style-type: none"> Diamond drilling comprised PQ3 (83 mm) and HQ3 (61.1 mm) core recovered using a 1.5 m barrel. Drilling was completed by Quest Exploration Drilling (QED). When ground conditions permit, an ACT Digital Core Orientation Instrument was used by the contractor to orientate the HQ3 core.
Drill sample recovery	<ul style="list-style-type: none"> Diamond drilling recovery percentages were measured by comparing actual metres recovered per drill run versus metres recorded on the core blocks. Recoveries averaged >98 % with increased core loss present in fault zones and zones of strong weathering/alteration.
Logging	<ul style="list-style-type: none"> Diamond holes are qualitatively geologically logged for lithology, structure and alteration and qualitatively and quantitatively logged for veining and sulphide mineralogy. Diamond holes are geotechnically logged with the following attributes qualitatively recorded - strength, infill material, weathering, and shape. Whole core and half core photography is completed on wet core. All holes are logged in their entirety and data recorded in templated excel workbook prior to being uploaded to the company's secure SQL database.
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> All diamond drill core was half cored with the lower or left half (looking downhole) submitted for sample preparation and analysis. All drill samples are prepared at the company's on-site sample preparation facility. After oven drying for 12 hours, sample material undergoes initial crushing in a Terminator Jaw Crusher to achieve particle size <2mm. For samples weighing in excess of 1kg, a 0.8kg to 1.2kg sample split is taken using a riffle splitter. Crushed samples of ~ 1kg standardized weight are then completely pulverized in an Essa LM2 Pulveriser (90% passing 75 microns). Approximately 200g of pulverised material is retained for assaying using a metal scoop to transfer material into analytical envelopes (pulp packets) before being sent to the ALS lab in Townsville. All reported results are from analysis conducted by ALS. For internal reference, a second pulverized sub- sample (~ 100 grams) is analysed at the site lab using same QAQC reference materials as those sent to ALS lab. Quality control of sample material prepared on site consists of insertion of two (non-certified) blank control samples at the start of each hole, and between each sample, any pulverised residue in the LM2 is discarded and the bowl vacuumed and wiped clean. 150 g to 200 g pulp samples are then sent to ALS Laboratory in Townsville for assay via air freight. Pulp residues are stored in Townsville for six months following assay for re-assay if required.
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> Pulps are analysed for Au via 50 g Fire Assay Atomic Absorption Spectroscopy (AAS) finish (Au-AA26 method) and multi-element (Ag, As, S, Fe, Cu, Pb, Zn, Mo and Sb) by Aqua Regia digest followed by Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES) instrument read (ME-ICP41S method). QC included insertion of certified reference material (1:20); insertion of in-house blank control material (2 at the start of each job); and the insertion of lab duplicates (1:20 split from the initial jaw crushed material prepared by the site lab. QAQC results were assessed as each laboratory batch was received and again at resource estimation cycles. Results indicate that pulveriser bowls were adequately cleaned between samples. ALS Townsville insert certified standards, replicates, lab repeats and complete sizing checks (1:40) or higher as part of their internal QAQC protocols.
Verification of sampling and assaying	<ul style="list-style-type: none"> Sampling data is recorded electronically which ensures only valid non-overlapping data can be recorded. Assay and downhole survey data are subsequently merged electronically. All drill data is stored in a SQL database on secure company server.
Location of data points	<ul style="list-style-type: none"> All drill collars were surveyed by company appointed surveyors using a DGPS in Tabar Island Grid (TIG) which is based on WGS84 ellipsoid and is GPS compatible. All diamond drill holes were downhole surveyed using a Reflex EZ track single shot camera with the first reading at 9, 12 or 18 m and one at 30 m and then approximately every 30 m increments to the bottom-of-the hole where an end of hole survey is also taken.
Data spacing and distribution	<ul style="list-style-type: none"> Resource definition drilling to define Indicated Mineral Resources is completed on a nominal 30m * 40m pattern. This spacing is adequate to establish both geological and grade continuity for the Mineral Resource and Ore Reserve procedures. Sampling is typically based on one-metre intervals with no compositing applied.
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> Drilling is orientated perpendicular to the major structures controlling the distribution of gold mineralisation. The orientation of the drilling ensures unbiased sampling of structures. Two exceptions include resource definition drill holes SDH535 and SDH550 which were drilled at an azimuth of 181 degrees and 155 degrees respectively. This is due to topography restricting access and preventing the Pigibo mineralisation being tested from the optimal orientation in these areas.
Sample security	<ul style="list-style-type: none"> Only company personnel or approved contractors are allowed on drill sites; drill core is only removed from drill site to secure core logging/processing facility within the gated exploration core yard; core is promptly logged, cut, and prepped on site. The samples sent to ALS are stored in locked and guarded storage facilities until receipted at the Laboratory.
Audits or reviews	<ul style="list-style-type: none"> No audits or reviews of sampling protocols have been completed.

Section 2 Reporting of Exploration Results – Simberi ML136 (Pigibo)

Criteria	Commentary
Mineral tenement and land tenure status	<ul style="list-style-type: none"> SBM has 100 % ownership of the three tenements over the Simberi Islands; ML136 on Simberi Island, EL609 which covers the remaining area of Simberi Island, as well as Tatau Island and Big Tabar Island and 4 sub-block EL2462 which covers part of Tatau and Mapua Islands.
Exploration done by other parties	<ul style="list-style-type: none"> CRA, BHP, Tabar JV (Kennecott, Nord Australex and Niugini Mining), Nord Pacific, Barrick and Allied Gold have all previously worked in this area. Nord Pacific followed by Allied Gold was instrumental in the discovery and delineation of the 5 main oxide and sulphide deposits at Simberi.
Geology	<ul style="list-style-type: none"> The Simberi gold deposits are low sulphidation, intrusion related adularia-sericite epithermal gold deposits. The dominant host rocks for mineralisation are andesites, volcanoclastics and lesser porphyries. Gold mineralisation is generally associated with sulphides or iron oxides occurring within a variety of fractures, such as simple fracture in-fills, single vein coatings and crackle brecciation in the more competent andesite units, along andesite/polymict breccia contact margins as well as sulphide disseminations. Deeper holes in the area between Pigiput and Sorowar intersected up to 100m of semi continuous carbonate +/- quartz base metal / Au veining, similar in style to mineralization occurring on Tatau and Big Tabar islands to the south, which are also prospective for Porphyry Cu/Au deposits.
Drill hole Information	<ul style="list-style-type: none"> Drill hole information is included in intercept table outlining collar position obtained by DGPS pickup, hole dip and azimuth acquired from a downhole surveying camera as discussed in section 1, composited mineralised intercepts lengths and depth as well as hole depth.
Data aggregation methods	<ul style="list-style-type: none"> For gold only epithermal mineralisation, broad down hole intercepts are reported as length weighted averages using a cut-off of 0.6 g/t Au, minimum width of 2 m, and a minimum grade*length of 2.5 gmpt (gram metre per tonne). Such intercepts may include material below cut-off but no more than 5 sequential metres of such material and except where the average drops below the cut-off. Supplementary cut-offs, of 1.0 g/t, 2.5 g/t, 5.0 g/t and 10.0 g/t Au may be used to highlight higher grade zones and spikes within the broader aggregated interval. Single assays intervals are reported only where ≥ 2.5 g/t Au and ≥ 1 m down hole. Core loss is assigned the same grade as the sample grade; no high-grade cut is applied; grades are reported to one decimal figure and no metal equivalent values are used for reporting exploration results.
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> Down hole length was reported for all holes. Simberi lodes display high variability in orientation and complex geometries because of the interplay of veining, brecciation intensity, host lithology and oxidation fronts. Six of the resource definition drill holes (SDH532, 536, 539, 543, 545 and 553) are drilled toward the southwest (azimuth 210°) roughly perpendicular to the interpreted northwest strike to mineralisation and at angles between 60° and 70° from horizontal. Pigibo sulphide mineralisation forms a 40 m to 70 m thick shallow dipping tabular body which is thickest in the centre. A feeder structure below the main body of mineralisation dips to the northeast at approximately 30° but steepens to 65° in the centre of the orebody and progressively thins out in the steeper section. Unlike the Pigiput orebody that dips to northeast at approximately 30°. The relatively flat geometry of Pigibo is such that drill holes intersect the mineralisation at angles of between 70° and 90° respectively depending on their inclination and down-hole mineralised intercepts are exaggerated over true widths by between 1.2 and 1.3 times, with vertical holes likely representing true thickness. Two resource definition drill holes were drilled oblique to the rest of the program due to a lack of ground access as a result of steep topography. SDH535 was drilled towards the south (dips -65 towards azimuth 180°) and SDH550 was drilled towards the south-southeast (dips -60 towards azimuth 155°) and as a result down-hole mineralised intercepts are likely exaggerated over true widths by between 1.3 and 1.5 times.
Diagrams	<ul style="list-style-type: none"> Included in the body of the report.
Balanced reporting	<ul style="list-style-type: none"> Details of all holes material to Exploration Results are reported in intercept tables. This report covers the remaining eight holes of a twenty-three hole resource definition drilling program. Assay results from the first fifteen FY24 resource definition diamond drill holes are reported in Table 1 of the ASX release dated 10 April 2024 titled "New Sorowar – Pigiput Mineralised Zone Confirmed by Latest Diamond Drilling Assays".
Other substantive exploration data	<ul style="list-style-type: none"> Included in the body of the report.
Further work	<ul style="list-style-type: none"> Included in the body of the report.

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End of report